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ABSTRACT

Most research on school effectiveness has focused solely on academic outcomes among pupils. In standardized educational systems, academic outcomes tend to be measured in terms of examination results. In other systems, outcomes are measured in terms of standardized ability test scores. Studies that focus on both academic and nonacademic outcomes among pupils are comparatively rare. This paper uses data from a national survey of second-level schools in Ireland to assess the relationships among and the factors influencing a range of academic and nonacademic pupil outcomes. The analyses employed the Junior Certificate examination scores, a nationally standardized examination taken at 15-16 years of age from a sample of 116 schools. Additionally, a number of measures of pupil outcomes are used: pupil absenteeism, potential dropout, current stress levels, academic self-image, locus of control, and body image. Analyses indicate that school effectiveness must be seen as outcome-specific since schools that promote academic progress among pupils do not necessarily enhance their personal/social development. Higher performing schools tend to have lower absenteeism and dropout rates. An appendix lists derivation of variables. (Contains 14 references.) (DFR)

Dimensions of School Effectiveness: Academic and Non-academic Outcomes among Pupils in the Republic of Ireland

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Introduction

Most research on school effectiveness has focused solely on academic outcomes among pupils. In standardised educational systems, such as England and Scotland, academic outcomes tend to be measured in terms of examination results (see, for example, Goldstein *et al.*, 1993). In other systems, such as the United States, outcomes are measured in terms of standardised ability test scores (see, for example, Teddlie and Stringfield, 1993). In comparison, studies which focus on both academic and non-academic outcomes among pupils are comparatively rare. Some studies have considered pupil behaviour (Rutter *et al.*, 1979; Mortimore *et al.*, 1988) and/or personal/social development (such as academic self-image and locus of control) among pupils (see Brookover *et al.*, 1979; Bryk *et al.*, 1993). However, findings have differed concerning the relationship between academic and non-academic outcomes. Mortimore's study indicated no discernible relationship between school effects in relation to cognitive and non-cognitive outcomes (see also Brookover *et al.*, 1979), while Rutter's study indicated that schools which did better in terms of exam performance also did better in terms of pupil behaviour and delinquency. More recently, researchers have stressed the need to study a broad range of educational and developmental outcomes of the schooling process (Knuver and Brandsma, 1989; Creemers and Scheerens, 1994; Gray, 1995).

This paper uses data from a national survey of second-level schools in the Republic of Ireland to assess the relationships among, and the factors influencing, a range of pupil outcomes, both academic and non-academic. The analyses relate to pupils taking the Junior Certificate examination, a nationally standardised examination taken at 15-16 years of age.

Methodology

A national survey of second-level schools and pupils in Ireland was conducted in 1994. A sample of 116 schools was drawn using stratified random sampling with schools selected to be representative of the national distribution of schools in terms of school sector, gender composition, school size and location. Detailed interviews were carried out with school principals and guidance counsellors in order to obtain information on key aspects of school organisation and process. The pupils selected for study were the Junior Certificate and Leaving Certificate exam year groups. Classes were sampled within schools, taking roughly half the total number of classes from the relevant years in each selected school and allowing for differences between schools in the system of class allocation (streaming as opposed to mixed ability) in selection. Pupils at Junior Certificate (15-16 years of age) and Leaving Certificate (17-18 years of age) completed questionnaires which covered topics such as take-up of subjects and levels, family background of the pupil, attitudes to school, perceptions of school climate and interaction with teachers, pupil stress levels and other aspects of personal/ social development. In total, questionnaires were completed by 5,961 Junior Certificate and 4,813 Leaving Certificate pupils (see Hannan, Smyth *et al.*, 1996).

For the Junior Certificate group, verbal reasoning and numerical ability (VRNA) tests were administered approximately three months before the Junior Certificate exams. In addition, information was obtained from teachers on pupils' attendance record over the academic year. It would have been preferable to have intake measures of pupil ability in order to explore the impact of school characteristics on subsequent performance. However, previous analyses (see Hannan, Smyth *et al.*, 1996) indicated that third-year test scores could be taken as a broadly reliable proxy of differences in

ability on intake[1]. Data were subsequently added on pupils' exam grades in the Junior and Leaving Certificate exams. A second phase of the study involved detailed case-studies of six of the 116 schools; these case-studies explored perspectives among school management and teachers in order to explore the complex interaction of school organisation 'on the ground'. However, analyses in this paper primarily relate to the larger sample of schools rather than to the case-study material (see Smyth, 1999, for further details).

A number of measures of pupil outcomes are used in this paper:

- Examination performance at Junior Certificate level, measured using the average grade (GPAV) received per exam subject;
- Pupil absenteeism, measured using teachers' reports of attendance records among Junior Certificate pupils;
- Potential drop-out among pupils, measured using pupils' reports of their intentions after the Junior Certificate exam; this information was supplemented by school records on actual rates of pupil drop-out over the junior and senior cycles;
- Current stress levels among pupils, measured using an adapted form of the conventionally used General Health Questionnaire scale (see Hannan, Ó Riain, 1993);
- Academic self-image among pupils, a measure of how pupils evaluate their own academic abilities;
- Locus of control among pupils, a measure of the extent to which pupils believe they are in control of events;

[1]This conclusion was based on analyses of the twenty-one schools in the sample for which intake measures were available.

- Body image among pupils, that is, pupils' evaluations of the attractiveness of their own bodies and self-presentation to others.

Further details on the construction of these variables are given in Appendix 1.

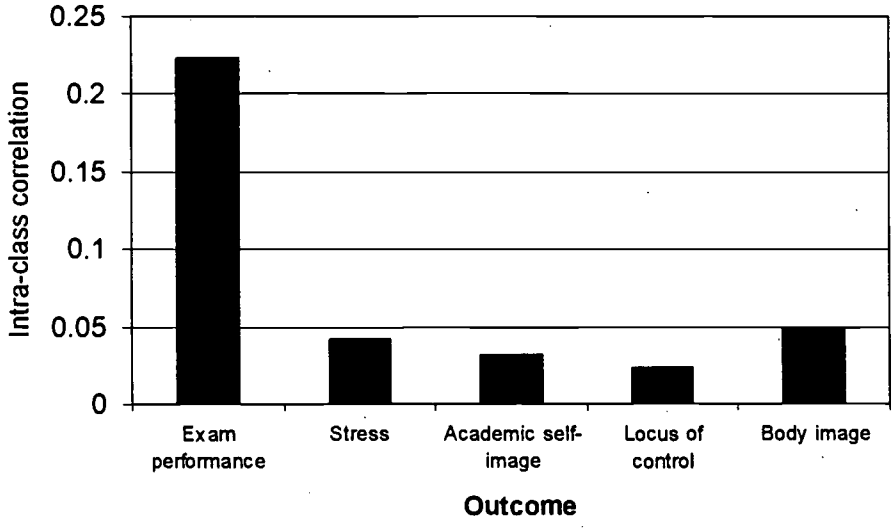
Analyses presented in the paper used the MlWin package for multi-level modelling developed by the Institute of Education, University of London (Rasbash *et al.*, 1999). Two sets of analyses were conducted. Firstly, multivariate multilevel modelling techniques were used to model the seven pupil outcomes as functions of pupil background variables. This facilitated an exploration of the relationships among different dimensions of school effectiveness, controlling for differences between schools in pupil intake. Secondly, analysis of a restricted set of school-level factors was carried out in order to assess whether different aspects of school organisation and process were differentially associated with various pupil outcomes. As multivariate multilevel analyses are computationally intensive, it was not possible to model all seven outcomes simultaneously as functions of both pupil-level and school-level factors. However, the second part of the paper brings together separate analyses of each pupil outcome in order to assess differences between them in their influences.

School differences in pupil outcomes

Figure 1 indicates the extent of variation among schools in a range of pupil outcomes, both academic and non-academic. The intra-school correlation indicates the amount of variation in a particular outcome which is attributable to the school, before controlling for pupil composition or school characteristics. It is clear that the greatest difference between schools is found in relation to academic performance. In contrast, only two to

five per cent of the total variation in pupil development outcomes is attributable to the school level.[2]

Figure 1: School Variation in Pupil Outcomes (intra-school correlation)



This pattern is not altogether surprising. One of the primary purposes of schools is to foster intellectual development among its pupils and examination performance represents a potential, though far from perfect, measure of such development. In contrast, few would argue that the enhancement of body image should represent an explicit objective of the schooling process. Thus, schools are more likely to influence the outcomes on which they focus more explicitly.[3] In addition, personal-social development among pupils is likely to be subject to a very broad range of influences, including family circumstances, neighbourhood effects, peer groups (outside school)

[2] As absenteeism and pupil drop-out are binary outcomes, the proportion of variation attributable to the school level cannot be derived in the same way.

[3] It is noteworthy, however, that interviews with teachers and school management indicate that they tend to adopt a complex view of the objectives of schooling (see Smyth, 1999).

and so on. It is not unusual, therefore, that there are considerable differences in pupil development among those in the same school.

It is evident that schools make more of a difference to academic outcomes, such as performance, than to personal/social development among pupils. However, it would also be interesting to determine whether school effectiveness can be regarded as uni-dimensional, that is, whether schools that are effective in academic terms are equally effective in terms of pupil development. The following section of this paper explores the extent to which these outcomes are inter-related at the school and pupil level.

Pupil outcomes at Junior Certificate level

Tables 1 and 2 present multivariate multilevel models where the seven pupil outcomes are modelled simultaneously as functions of the pupil background variables. This is carried out in terms of a three level model with schools treated as level 3 units, pupils as level 2 units and the 'within student' measurements (the seven pupil outcomes) as level 1 units. The model is a mixed response model since some of the outcomes are continuous and some are discrete (i.e., absenteeism and potential drop-out). A multivariate approach maximises the use of available data since there is no requirement that information be available for each pupil on all seven of the outcomes. The advantage of using a multivariate approach is that it allows us to examine the interrelationships among the outcomes at both the school and pupil level.

Table 1 presents the null model which indicates the school- and pupil-level variation before allowing for differences between schools in pupil intake. The school-level variances (shown on the diagonal) indicate that schools differ significantly from

each other in exam performance, absenteeism, potential drop-out, stress, academic self-image, sense (locus) of control and body image at Junior Certificate level.

In general, academic outcomes are significantly interrelated at school level; schools in which average exam performance is higher have significantly lower levels of absenteeism and drop-out. There are also some significant relationships between academic and non-academic outcomes. Schools with higher levels of pupil performance also tend to be characterised by more positive academic self-image and greater locus of control. However, schools with higher performance levels also have higher stress levels, a finding which indicates that there may be some 'trade-off' with higher performance being achieved at the expense of greater stress among pupils. There are also significant relationships among some measures of personal/social development; schools in which academic self-image is higher also tend to have higher average locus of control and body image.

Academic outcomes are also interrelated at the pupil level. Pupils who perform well in the Junior Certificate exam are more likely to have good attendance records and less likely to intend to leave school early. Measures of personal/social development are correlated with each other; pupils with higher academic self-image have more positive feelings of control and body image. Both academic self-image and locus of control are positively associated with pupil performance, although higher-performing pupils tend to have higher stress levels and more negative body images.

Table 1 shows the 'raw' relationships between the different pupil outcomes. The relationships among outcomes may be spurious, however; for example, the positive relationship between exam performance and stress at the school level may reflect a greater concentration of girls (who have higher exam scores and higher stress levels) in certain schools rather than reflecting a school effect *per se*. The model presented in

Table 2 includes pupil background and ability in order to allow for differences between schools in pupil intake.

There are clear differences among pupils in terms of their gender, social background and age. Girls appear to be at a relative advantage in terms of academic outcomes, having higher exam scores, lower potential drop-out and somewhat lower absenteeism rates, but are at a disadvantage in terms of measures of personal development. Girls tend to have higher stress levels, less sense of control over their lives and make more negative evaluations of their abilities and appearances than their male counterparts (Table 2).

Working-class pupils tend to be at a relative disadvantage in relation to both academic and non-academic outcomes; they have lower exam scores and are at greater risk of absenteeism and early school leaving, relative to their initial ability levels, than their middle-class counterparts. In addition, working-class pupils have less sense of control over their lives and more negative evaluations of themselves. A similar pattern is found in relation to mother's education, with higher performance, lower absenteeism and drop-out and more positive academic self-images found among pupils whose mothers have higher levels of education. Pupils who are older than average tend to do worse academically than younger pupils; they have lower exam scores, higher absenteeism rates and are more likely to report intending to leave school early. This group is likely to contain a disproportionate number of pupils who had experienced grade retention during their time in primary or second-level school and thus the pattern is likely to reflect a longer-term process of educational under-achievement. As might be expected, higher 'ability' pupils tend to do better in the Junior Certificate exam. They also tend to have lower absenteeism rates and are less likely to intend to drop out of school.

In general, there are fewer significant interrelationships among pupil outcomes, especially at school level, when pupil background and prior ability are taken into account. At school level, academic outcomes are significantly interrelated with higher performing schools having lower absenteeism and drop-out rates, even when pupil background and ability are taken into account (Table 2). The reduced size of the effects compared to the 'raw' correlations, however, indicates that many schools deviate from this pattern. Some schools may, for example, enhance pupil performance while at the same time failing to reduce pupil drop-out. Measures of personal/social development are not strongly interrelated at school level. However, schools that promote academic self-image also tend to promote locus of control among pupils. There are no longer any significant interrelationships between academic and non-academic outcomes (with the exception of the surprising positive relationship between performance and body-image) so schools that promote pupil performance do not necessarily have positive effects on pupil development. In addition, the positive relationship between average performance and stress levels evident from the 'raw' results is no longer evident. There is, therefore, no necessary 'trade-off' between academic effectiveness and raised stress levels among pupils.

At the pupil level, the relationships among outcome measures are broadly similar, even when adjustments are made for pupil background and ability. Pupils who do well in the Junior Certificate tend to have other positive academic and non-academic outcomes (with the exception of body image), although they have higher stress levels.

School factors

Due to computing limitations, it was not possible to model all seven pupil outcomes simultaneously as a function of both pupil-level and school-level factors. As a result,

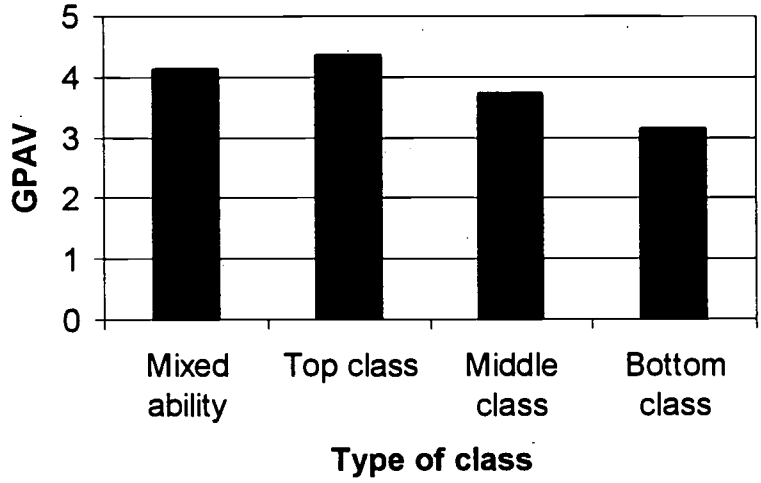
'side by side' analyses were carried out in which the results of a limited set of school factors were compared across the seven outcomes. A wider set of school-level factors has been considered elsewhere (Smyth, 1999).

The first set of variables relate to the system of ability grouping used in the sample of schools. Three systems of allocating pupils to base classes were used: (i) streaming, where pupils of similar assessed ability are grouped into classes, ranked from 'top' to 'bottom'; (ii) banding, a looser form of streaming with pupils divided into broad ability bands with mixed ability base classes within each band; and (iii) mixed ability, usually based on random (e.g. alphabetical) allocation or, more rarely, schools use ability measures to achieve a mix across classes. At Junior Certificate level, 37 per cent of schools use mixed ability base classes with the remainder using some form of ability-based differentiation (that is, streaming or banding). Within Irish schools, ability grouping has implications both for the range of subjects a pupil takes or is offered, and for the level at which a subject is taken.

Figure 2 presents estimates of pupil performance in top, middle and bottom classes within streamed schools compared with pupils in mixed ability base classes, controlling for pupil background and 'ability'. It indicates significant underperformance among those allocated to bottom classes within streamed schools. However, there is no corresponding gain for those allocated to top classes; this group do not significantly outperform those allocated to mixed ability base classes. This pattern appears to reflect two processes. Firstly, pupils in bottom classes are often allocated to lower levels within their exam subjects; as a result, a 'ceiling' is set to their potential performance. Secondly, there appears to be a labelling process whereby pupils (and their teachers) have lower expectations within bottom classes. This alienation from the school is also

manifest in the higher potential drop-out rates found among those in bottom classes (see Table 3).

Figure 2: Exam performance by ability group



Disciplinary climate is significantly associated with higher exam performance and lower pupil drop-out rates. However, the effect is mediated by the academic climate of the school. In other words, pupils tend to perform better, and are likely to stay on, in schools characterised as strict but this mainly reflects higher expectations among teachers in the school.

The quality of teacher-pupil interaction (from the perspective of the pupils) is significantly associated with all of the pupil outcomes, both academic and non-academic. Pupils who experience positive interaction with teachers (in the form of praise or positive feedback) tend to have higher exam performance, better attendance records, lower drop-out rates, lower stress levels, more positive self-evaluations and greater sense of control over their lives. In contrast, pupils who report negative interaction with teachers (that is, they feel they are frequently reprimanded or ignored)

have lower performance, higher absenteeism and drop-out, higher stress levels and more negative self-evaluations than other pupils.

Academic climate reflects the extent to which teachers within the school hold high expectations for their pupils (see Appendix 1). Higher teacher expectations are associated with higher exam performance, lower absenteeism and drop-out rates among pupils. Interestingly, however, pupils in schools characterised by a strong academic climate tend to have slightly higher stress levels and more negative evaluations of their own abilities. This is likely to reflect somewhat greater exam pressure within these schools (see Smyth, Hannan, *et al.*, 1996).

In summary, a number of factors, including positive teacher-pupil interaction and a stronger academic climate within the school, are associated with improved academic outcomes in the form of higher exam performance, better attendance records and lower pupil drop-out rates. The nature of pupil-teacher interaction within the school is significantly associated with both non-academic and academic outcomes among pupils, indicating the importance of informal school climate as well as formal school organisation.

Conclusions

Analyses in this chapter indicate that 'school effectiveness' must be seen as outcome-specific since schools that promote academic progress among pupils do not necessarily enhance their personal/social development. There is some indication that a dimension of academic effectiveness can be identified, that is, higher-performing schools tend to have lower absenteeism and drop-out rates. Similarly, there is some consistency among non-academic outcomes with significant interrelationships evident among academic self-image, body image and locus of control. Analyses at the pupil level indicate that

pupils tend to do better in their exams when they have a better attendance record, intend to stay on at school and have a more positive image of themselves.

It is debatable whether schools can be expected to significantly enhance all aspects of personal-social development among young people. Some developmental outcomes (such as positive body image) are not an explicit goal of the schooling process. However, even in these cases, schools may represent potential sites for intervention or referral for pupils with particular problems. Other outcomes, such as academic self-image, are relative in nature, that is, pupils assess their abilities in reference to their peers. Consequently, academic self-image cannot be equally high for all pupils in the school. However, if academic self-image is found to have an impact on actual performance, low self-image among particular groups of pupils must be a matter for concern.

In conclusion, the promotion of non-academic, as well as academic, outcomes by schools may be seen as a desirable goal. Analyses indicate that, while between-school variation in developmental outcomes is relatively small, certain aspects of school organisation and process can enhance personal/social development among pupils. Furthermore, attention within schools to the promotion of "non-academic" outcomes may in fact have positive effects on academic performance among individual pupils. In general, a consideration of a broader range of pupil outcomes than academic performance would appear to yield greater insight into the complex set of tasks and goals faced by second-level schools.

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Table 1: Multivariate Model of Pupil Outcomes at Junior Certificate: Null Model

	Pupil outcomes						
	Exam performance	*Absenteeism*	*Potential Drop-out*	*Stress*	*Academic Self-image*	*Locus of control*	*Body image*
Fixed effects							
Intercept	6.428*	-1.252*	-1.131*	1.999*	2.651*	2.967*	4.425*
Random effects							
School-level							
Exam performance	0.926*						
Absenteeism	-0.54*	0.569*					
Potential drop-out	-0.86*	0.49*	0.491*				
Stress	0.39*	-0.12	-0.58*	0.011*			
Academic self-image	0.25*	-0.23	-0.23	-0.19	0.006*		
Locus of control	0.41*	-0.11	-0.49*	-0.01	0.73*	0.004*	
Body image	0.12	-0.23	0.09	-0.64*	0.75*	0.33*	0.055*
Pupil-level							
GPAV	3.250*						
Absenteeism	-0.33*	1.0					
Potential drop-out	-0.45*	0.26*	1.0				
Stress	0.04*	0.03	0.02	0.264*			
Academic self-image	0.40*	-0.15*	-0.26*	-0.14*	0.182*		
Locus of control	0.21*	-0.09*	-0.18*	-0.33*	0.45*	0.162*	
Body image	-0.07*	0.02	0.04*	-0.20*	0.14*	0.15*	1.068*
Deviance	60632.9						

Note: Variances on diagonal (underlined), correlations off-diagonal; * p<.05.

Table 2: Multivariate Model of Pupil Outcomes at Junior Certificate: Adjusted Model

	Pupil outcomes						
	Exam performance	*Absenteeism*	*Drop-out*	*Stress*	*Academic Self-Image*	*Locus of Control*	*Body image*
Fixed effects							
Intercept	6.560*	-1.460*	-0.978*	1.848*	2.704*	3.039*	4.765*
Gender	0.562*	-0.171	-1.047*	0.265*	-0.046*	-0.034*	-0.470*
Social class[1]	-0.109*	0.062*	0.058*	0.002	-0.018*	-0.012*	-0.054*
Mother's education[1]	0.047*	-0.121*	-0.188*	0.005	0.019*	-0.006	0.006
Aged 16 or over	-0.522*	0.297*	0.595*	0.009	-0.064*	-0.079*	0.009
Ability (VRNA)[1]	0.076*	-0.024*	-0.049*	0.001	0.007*	0.004*	-0.005*
Random effects							
School-level							
Exam performance	0.181*						
Absenteeism	-0.26*	0.537*					
Potential drop-out	-0.37*	0.34*	0.161*				
Stress	-0.06	-0.13	-0.47*	0.004*			
Academic self-image	-0.18	0.16	0.20	-0.04	0.005*		
Locus of control	0.03	0.20	-0.29	-0.14	0.62*	0.003*	
Body image	0.40*	-0.20	-0.07	-0.08	0.27	0.16	0.021*
Pupil-level							
Exam performance	1.334*						
Absenteeism	-0.23*	1.0					
Potential drop-out	-0.28*	0.17*	1.0				
Stress	0.24*	0.04*	0.06*	0.249*			
Academic self-image	0.23*	-0.09*	-0.17*	-0.15*	0.162*		
Locus of control	0.12*	-0.05*	-0.13*	-0.34*	0.41*	0.155*	
Body image	-0.02	0.01	0.02	-0.20*	0.17*	0.16*	1.036*
Deviance	53666.6						

Note: Variances on diagonal (underlined), correlations off-diagonal. 1. Dummy variables were also fitted for those with missing values on these variables.

Table 3: Single-outcome models of school-level factors and pupil outcomes, controlling for pupil characteristics

	Pupil outcomes						
	Exam performance	*Absenteeism*	*Drop-out*	*Stress*	*Academic Self-Image*	*Locus of Control*	*Body image*
Fixed effects[1]							
Ability grouping:							
Streaming	-0.075	0.062	0.076	-0.004	-0.014	-0.023*	-0.015
Top class	0.552*	-0.186	-0.253	0.042	-0.003	0.044	-0.013
Middle class	-0.085	-0.136	-0.043	-0.003	0.029	0.101*	-0.004
Bottom class	-0.661*	-0.037	0.372*	0.014	0.055	0.003	-0.014
Disciplinary climate	0.075	0.114	-0.112	-0.018	-0.010	0.009	0.045
Teacher-pupil interaction:							
Positive	0.238*	-0.307*	-0.637*	-0.084*	0.276*	0.146*	0.285*
Negative	-0.374*	0.480*	0.552*	0.190*	-0.104*	-0.111*	-0.006
Academic climate	0.942*	-0.808*	-0.773*	0.066*	-0.073*	-0.014	0.148*
Random effects							
School-level	0.116*	0.598*	0.143*	0.003*	0.004*	0.003*	0.017*
Pupil-level	1.124*	1.0	1.0	0.241*	0.133*	0.144*	1.010*
Deviance	15524.3	3683.85	2305.12	7351.17	4360.61	4765.2	14677.2

Note: * p<.10; ** p<.05. Variances on diagonal (underlined), correlations off-diagonal. 1. These represent school-level variable effects controlling for pupil background factors.

Appendix 1: Derivation of Variables

Variables	*Description*
Pupil outcomes	
Junior Certificate exam performance	Exam grades are assigned scores from 0 to 10 and averaged over all exam subjects taken.
High absenteeism	Dummy variable where 1= Pupil has poor or average attendance records based on teacher reports.
Potential drop-out	Dummy variable where 1= Pupil is not definite about staying on to the Leaving Certificate.
Stress	Likert scale based on the following items: (1) Been able to concentrate on whatever you're doing (2) Felt that you were playing a moderately useful part in things (3) Felt capable of making decisions about things (4) Lost much sleep over worry (5) Felt constantly under strain (6) Been losing confidence in yourself. Reliability: alpha of 0.72. Original scores range from 6 to 24; scores were averaged over the six items to give a variable with a range of 1 to 4.
Academic Self-Image	Likert scale based on the following items: (1) I can do just about anything I set my mind to (2) I'm usually well ahead of others in my year in school (3) I am as good at school work as most other people my age (4) I'm hardly ever able to do what my teachers expect of me (reversed) (5) I'm usually well ahead of others in my class. Reliability: alpha of 0.67. Scores range from 1 to 4.
Locus of Control	Likert scale based on the following items: (1) I have little control over the things that happen to me (reversed) (2) There is a lot I can do to change my life if I really want to (3) I often feel helpless in trying to deal with the problems I have (reversed) (4) What happens in the future really depends on me (5) I can do just about anything I set my mind to (6) There is really no way I can solve some of the problems I have. Reliability: alpha of 0.50. Scores range from 1 to 4.

Body Image	Likert scale based on the pupils' selection from adjective pairs: (1) Plain - Good-looking (2) Fat - Thin (3) Awkward - Graceful (4) Unattractive - Attractive. Reliability: alpha of 0.64. Scores range from 1 to 7.
Explanatory variables	
Gender	Dummy variable where 1= Girl.
Social class	Census Social Class scale ranging from 0 (Higher Professional) to 5 (Unskilled manual worker) based on the occupational status of parents.
Mother's education	Highest level of mother's education ranging from 0 (primary education) to 4 (university degree).
Aged 16 and over	Dummy variable where 1= Aged 16 or more on 1st January 1994.
Ability	VRNA, combined verbal reasoning and numerical ability scores; centred on its mean value.
Streaming	Extent of streaming and associated curricular differentiation in the school; Guttman scale ranging from 0 (mixed ability base classes) to 4 (highly streamed).
Top class Middle class Bottom class	Set of dummy variables where 1= in top, middle or bottom/remedial class respectively; contrasted with membership of mixed ability base class.
Disciplinary climate	School-level average of pupil rating of school as "strict"-"easy-going".
Positive teacher interaction	Likert scale based on frequency of following items: (1) Have you been told that your work is good? (2) Have you been asked questions in class? (3) Have you been praised for answering a difficult question correctly? (4) Have you been praised because your written work is well done? Reliability: alpha is 0.68. Ranges from 0 (low) to 3 (high).

Negative teacher interaction	Likert scale based on frequency of following items: (1) Have you been given out to because your work is untidy or not done on time? (2) Have you wanted to ask or answer questions in class but were ignored? (3) Have you been given out to for misbehaving in class? (4) Teachers pay more attention in class to what some pupils say than to others. (5) I find most teachers hard to talk to. Reliability: alpha is 0.59 (JC) and 0.61 (LC). Values range from 0 (low) to 3 (high).
Academic climate	School-level average of the highest qualification which teachers expect the pupil to get. Ranges from 1 (Junior Cert) to 4 (University Degree).

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